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III. *The Variation of the Magnetical Compass, observed by Capt. Rogers, Commander of the Ship Duke, in his Passage from Cape St. Lucar in California to the Isle of Guam or Guana, one of the Ladrones, with some Remarks thereon. Communicated by the same.*

HAVING lately had the Opportunity of perusing Capt. *Woods Rogers's* original Journal, who in 1709-10, in eight Weeks time traversed the great *South-Sea*, or *Pacifick Ocean*, I was highly pleased to find the Care he had taken to set down the Variations of the *Magnetical Compass* in his Passage from the South Cape of *California* to the Island of *Guana*, being about seven Hours or 105 Degrees of Longitude. This might have been long since expected from Capt. *Dampier*, who had three times made the *Tour* of the *World*, and thrice gone this very same Track.

It were to be wisht that the *French*, who have had frequent Opportunities to do it, would bestow upon us an account of the Variations they have lately found in their Voyages from *Peru* and *Chili* to *China*; and that the *Spaniards* would tell us how the Needle varies at this time in the North Part of that great Sea, through which they return from the *Manilla's* to *New Spain*. With these helps, having three Points in each Curve, we might be enabled

abled with a tolerable certainty to compleat the System of the Magnetick Variations, which I was forced to leave unfinished, as to this part of the Ocean, in my General Chart thereof, for want of the Observations requisite.

In the mean time, please to take the following Account extracted from Capt. *Rogers's* Journal; wherein the first Column gives the correct Latitude of the Place; the second, the Longitude West from *London*, as estimated by Reckoning; and the third the Variation, which in this whole Track is *Easterly*.

*Variations observed in the Great South-Sea, from the South Cape of California to the Island of Guana or Guam, one of the Ladrões.*

January 1709-10.	Lat. correct. every Day	Long. West from London	Variation Easterly.
12	22 16	114 09	03 00
	21 18	114 42	02 50
	20 24	115 15	02 50
15	19 25	115 45	02 50
	18 56	116 24	02 45
	18 00	117 06	02 45
	17 11	117 30	02 15
	16 32	118 05	02 00
20	15 44	118 54	01 50
	15 00	120 15	01 30
	14 49	122 05	01 10
	14 36	124 25	00 50
	14 24	126 45	00 40
25	14 14	129 05	00 45
	13 50	131 23	00 50
	13 29	132 58	01 00
	13 29	134 41	01 10
	13 22	136 48	01 15
30	13 27	139 21	01 25
	13 32	142 07	01 30
Feb. 1	13 32	144 37	01 40
	13 36	147 32	01 50

*Variations observed in the SOUTH-SEA.*

1709-10.	Lat. North	Long. West	Variation
Feb. 3.	correct. daily.	from London.	Easterly.
	13 26	150 18	02 00
	13 26	153 02	02 10
5	13 26	155 19	02 25
	13 26	157 43	02 30
	13 25	160 31	02 50
	13 41	163 00	03 00
	13 41	165 18	03 20
10	13 44	167 26	03 30
	13 36	169 56	03 45
	13 33	172 27	04 00
	13 36	175 00	04 30
	13 32	177 21	05 20
15	13 40	179 28	06 30
	13 47	181 24	07 00
	13 54	183 22	07 30
	13 52	185 37	09 00
	13 40	187 42	10 15
20	13 28	189 49	11 00
	13 21	191 30	11 30
	13 12	193 25	12 00
	13 07	194 37	11 50
	13 10	195 51	11 00
25	13 03	197 51	10 00
	13 00	199 03	09 50
	12 57	200 16	09 30
	12 54	202 20	09 00
March 1	12 58	204 12	08 40
	13 04	206 06	08 20
	13 05	207 33	08 00
	13 05	209 04	07 50
5	13 02	211 54	07 30
	13 07	212 42	07 10
	13 07	214 07	07 00
	13 03	215 28	06 50
	13 08	217 11	06 30
10	13 16	218 27	05 40

Island of *Guana* in Sight.

By this it appears, that at about 250 or 300 Leagues West from the South-head of *Caleformia*, the *East Variation* diminishes to about  $\frac{1}{2}$  of a degree; That for 1300 Leagues from thence, the same *Easterly Variation* gradually encreases to about 12 degrees, where it becomes greatest. And that at the Isle of *Guam*, five hundred Leagues still more *Westerly*, it is again decreased to 5 degrees 40 minutes.

As far as this single Instance can direct us, I am inclinable to think, that in all that space of Sea which lies to the Northwards of our Track, between *Japon* and *Caleformia*, there reigns an *Easterly Variation*, which is still greater and greater as the North Latitude encreases. But that to the Southward of our Track, and especially to the Southward of the Equinoctial, a *Westerly Variation* arises, of no great extent or quantity, but which is greatest about 1000 Leagues West from the Coasts of *Peru* and *Chili*, about the same Meridians where Capt. *Rogers* found the *East Variation* smallest. This is agreeable to the *Theory* of the *Variation* I laid down in No. 148. of these *Transactions*, about 40 Years since; and I then expressly mentioned, in my seventh Remark on the Observations there cited, that there was undoubtedly such a Tract of *West Variation* in the Southern Parts of the *South-Sea*, it being the necessary Consequence of the Site of the four Magnetical Poles there supposed, though at that time I wanted Experiments to prove it.